

# ASBESTOS IN CANADA

Asbestos is a mineral with more than 3,000 different uses. Its best quality is its resistance to fire. However, because asbestos is combustible and can be woven into fabrics, it is a valuable industrial material. The characteristics of asbestos open up a wide variety of applications ranging from brake linings in automobiles and aircraft, to pipes for water and sewer systems. Canada leads the world in the mining and milling of asbestos, accounting for more than 40 per cent of total annual production.

Asbestos is the commercial name for various varieties of several min-

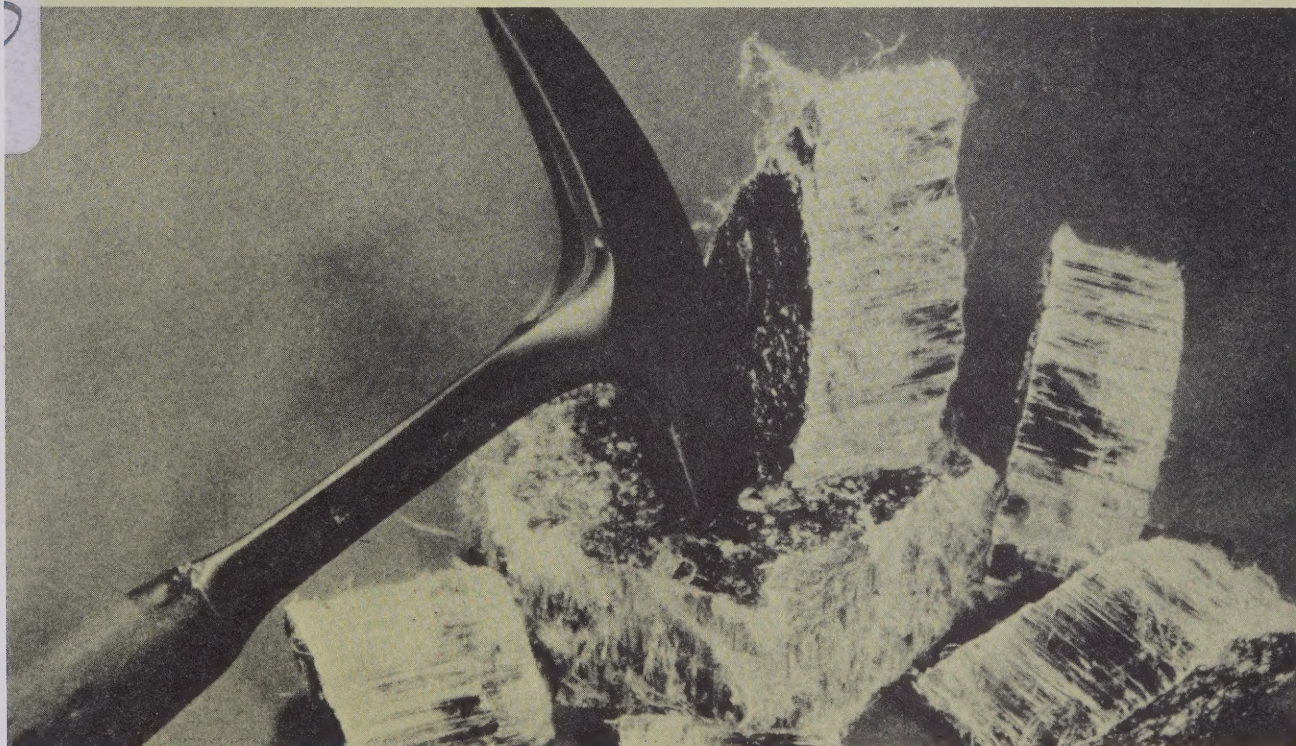
erals. The types produced commercially are chrysotile, crocidolite (blue asbestos), amosite and anthophyllite. Chrysotile fibres are very fine, flexible and highly resistant to heat, whereas the other types are more brittle and have a harsher texture. Both crocidolite and amosite are highly acid resistant, making their use particularly important in chemical plants.

Because of its many practical qualities, chrysotile makes up about 90 per cent of the world production and trade. In Canada, chrysotile is the only type of asbestos mined.

According to historical records,

the Romans were first to use asbestos. More than 2,000 years ago they shrouded their dead in asbestos cloth before cremation. Later both Greeks and Romans used asbestos for lampwicks that seemed to burn forever. In Canada the earliest use of asbestos was reported by the American inventor, author and diplomat, Benjamin Franklin. When visiting Canada in 1724, he obtained an asbestos purse made by Indians.

The modern asbestos industry had its beginnings in Italy in 1868. The first Canadian mine opened in 1878 in the Eastern Townships of Québec and milling first began in 1888.



Processing: Chrysotile, the fibrous form of the mineral serpentine, makes up the bulk of commercial asbestos. The mineral fibres are white, the mineral vein itself varies from green to amber.



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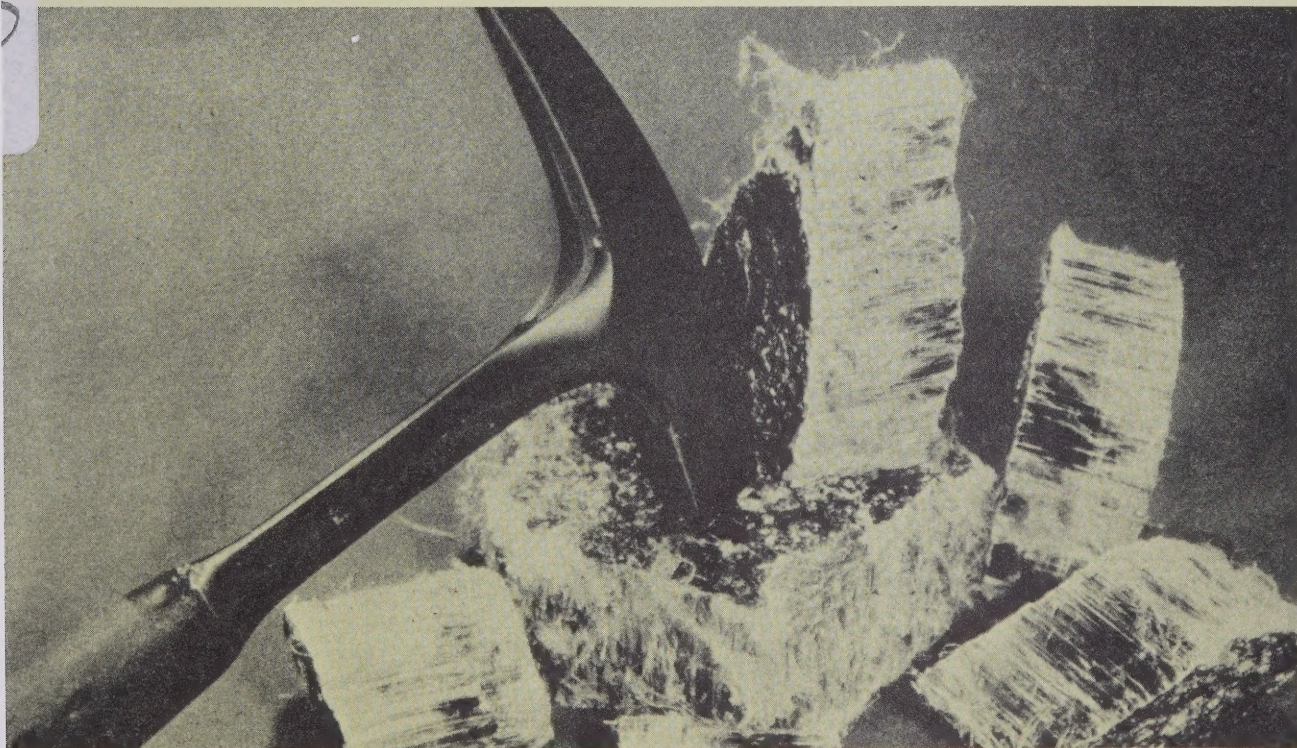
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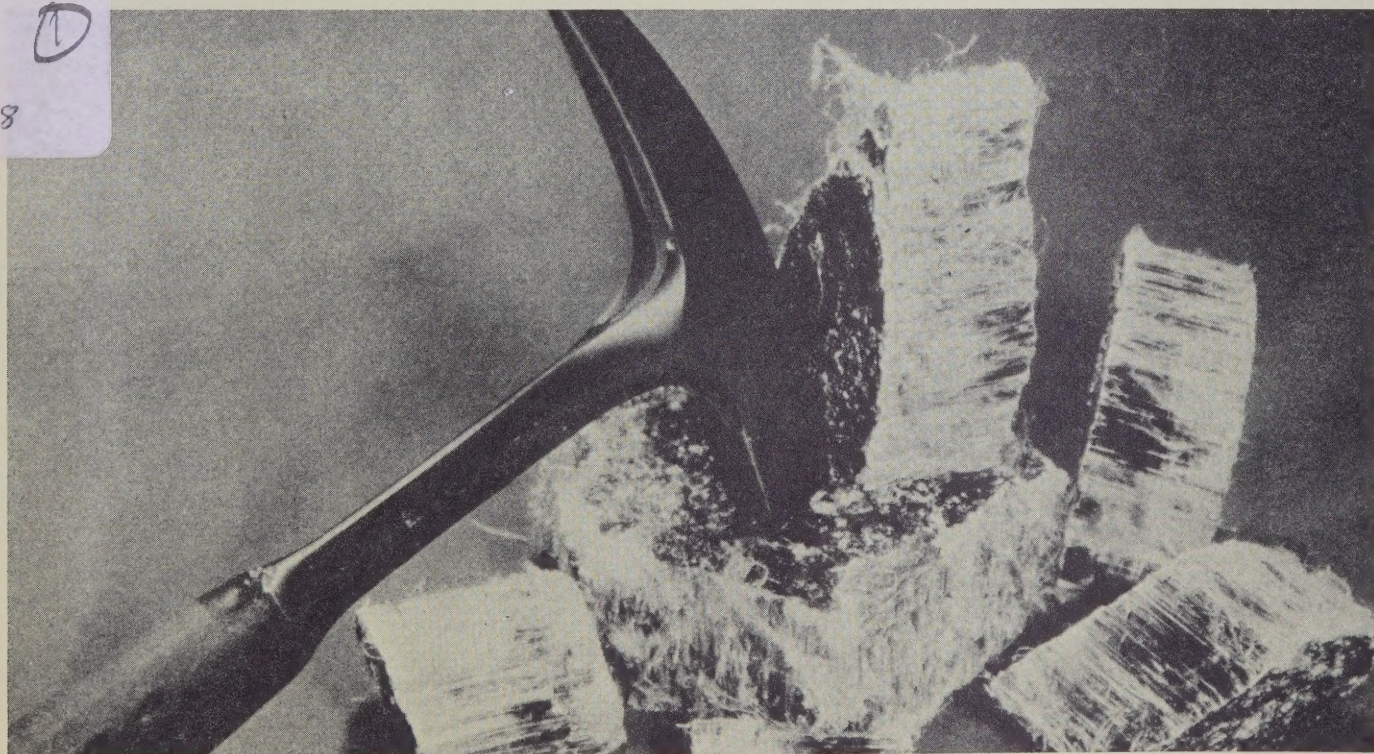
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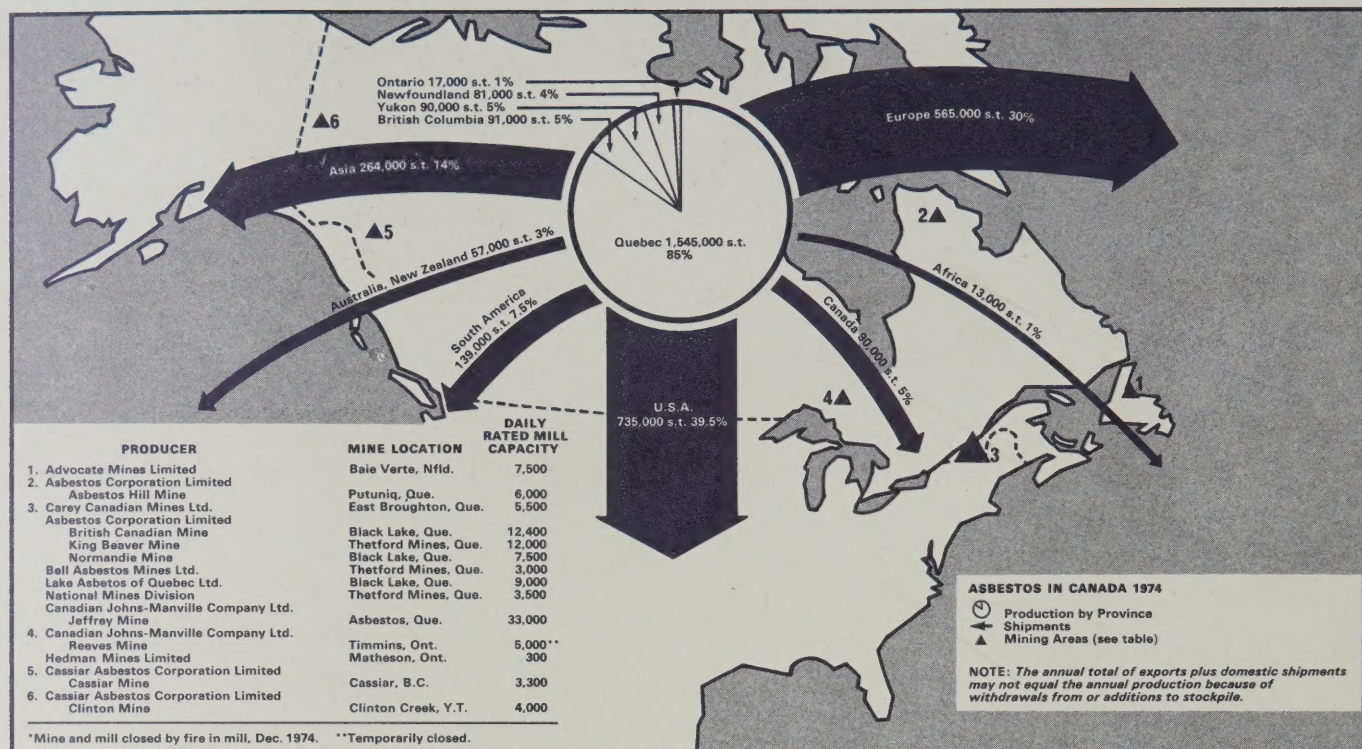
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## Production in Canada

In Canada, asbestos occurs as veins within deposits of iron-magnesium rich igneous rocks. The veins of asbestos may vary from hairline size to four inches in width, although most are less than three-eighths of an inch wide. In the Eastern Townships of Québec the formation of asbestos took place more than 400 million years ago.

The world's major source of asbestos is a 70-mile-long belt of rock in the Eastern Townships extending from the town of Asbestos in the west, to East Broughton in the east. Asbestos is the site of the western world's largest known deposit.

The mineral is also mined at several other locations in Canada. These are: Baie Verte, Newfoundland; Deception Bay in the Ungava Bay region of Québec; near Matheson, Ontario; Cassiar in northern British Columbia, and Clinton Creek in the Yukon. Deposits near Amos and Chibougamau, Québec, and near Matachewan, Ontario, are being evaluated with a view to possible production.

Most of the asbestos mines in Canada are surface (open pit) mines although there are two underground operations. After the rock is mined, it



Asbestos-bearing rock is carried from mine to mill for processing.

is processed in mills where the asbestos fibre is separated from the rock. Fibres longer than three-eighths of an inch are known as *crude*. The longest fibres can be separated from the rock by hand but the shorter material requires milling. About 90 per cent of total fibre production is milled.

The rock entering the mill contains a relatively small percentage of asbestos (2.5 per cent to 10 per cent). It is therefore necessary to process large tonnages each day. Mill capacities range from several hundred tons to 33,000 tons a day at the largest mill in Asbestos, Québec.

Fibre is separated from rock by a process that includes several stages of crushing, screening, fiberizing and aspiration, that is, lifting the fibre from the screens by overhead suction. The fibres are then separated into different groups or grades, packaged, and distributed to factories where the many useful products are manufactured.

## Uses of Asbestos

The main criterion for assessing different grades and the value of asbestos is fibre length. The longer fibres can be carded and spun into yarns either alone or along with cotton, thin brass or copper wire. Other qualities, such as filterability, oil and water absorption, surface area and ease of fibre separation, are becoming increasingly important with wider and more specialized uses of asbestos.

Asbestos has many characteristics. It is strong and durable, resists fungus growth, corrosion, heat, acids and vermin. It insulates against heat, vibration, electricity and sound. Its fibrous form helps bind fillers, rubber, asphalt and cement. About half of the world production is used in asbestos-cement products. Asbestos fibre can be sprayed onto a surface, moulded with plastics or glass, and dispersed in fluids,

greases, adhesives and sealing compounds.

Other products using asbestos fibres include fireproof clothing, rugs, wallboard, space vehicle heat shields, electrical tape, wicks for oil burners, rope, twine, sewing thread, draperies, awnings, theatre curtains, movie screens, oven insulations, conveyor belts, baking sheets, hot air ducts, ironing board covers and hoses.

## The World Market

Canada and the USSR are the world's two major asbestos producers. Russian production in 1973, for example, was about 1.4 million tons (excluding about a million tons of very low-grade short fibre) compared with Canadian production of more than 1.8 million tons. South Africa is the major producer of crocidolite and amosite, with an annual production of more than 300,000 tons. Other asbestos-pro-



An open pit asbestos mine.

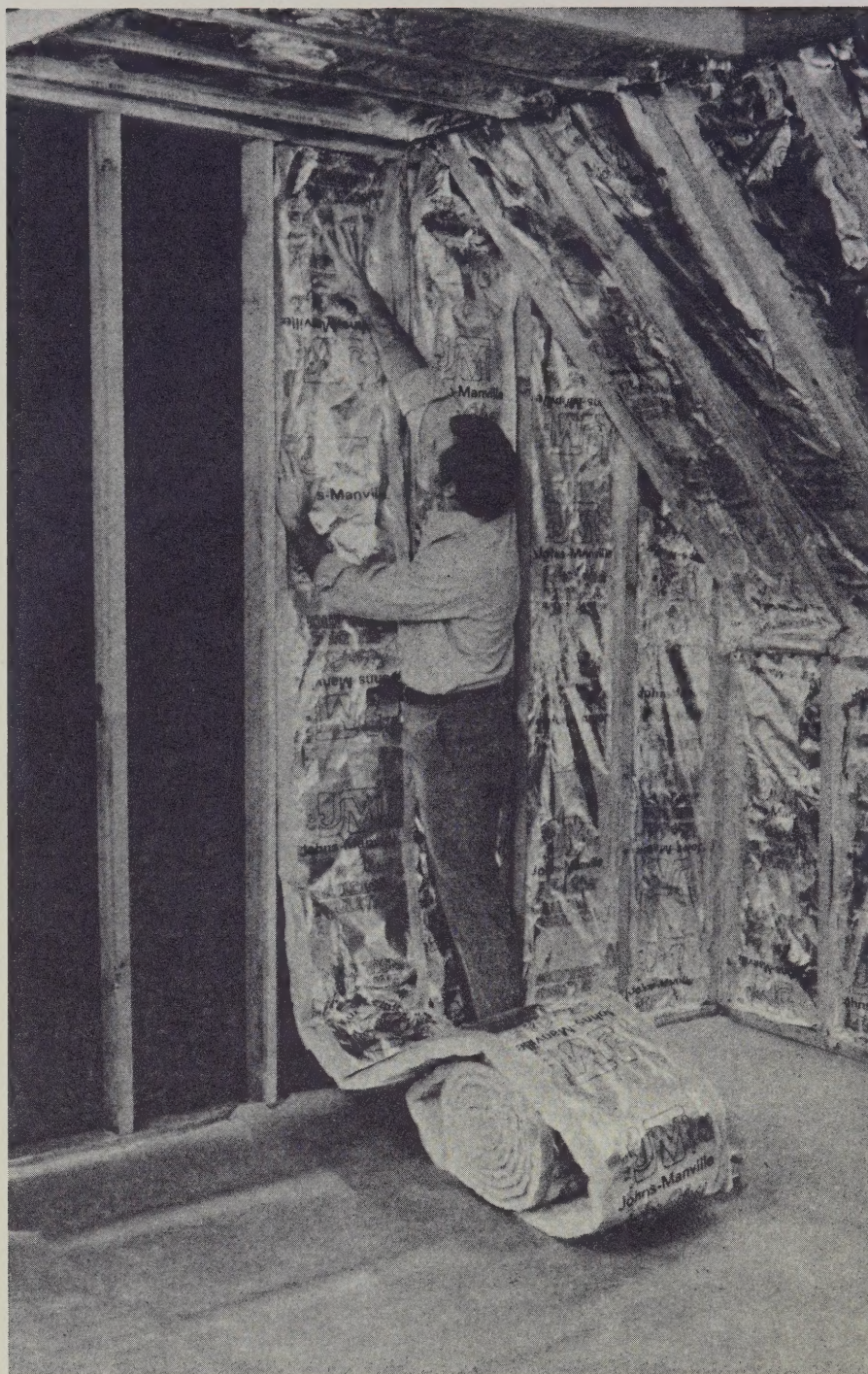
ducing countries in decreasing order of output include Italy, United States, Rhodesia, China, Swaziland and Cyprus.

More than 90 per cent of Canada's annual asbestos production is exported to about 70 countries. The United States is Canada's major market, followed by Japan, Britain, West Germany and France.

### Looking Ahead

In terms of production value, asbestos is the seventh most important mineral — including oil and gas — produced in Canada. Its importance to Canada will continue as the country's reserves continue to meet domestic and export needs, and there is little likelihood of competition from synthetic replacements in the near future.

As to the question of health hazards in the processing of asbestos, considerable progress has been made in reducing dust concentration in the air of asbestos mills and factories. Over the next few years the Canadian asbestos industry will spend some \$20 million to ensure continuing and better environmental control.




Insulation is one of the many commercial uses of asbestos.

#### **Prepared for the Mineral Development Sector by Information EMR**

For more statistical and general information on Canada's mineral industries see *Handbook Canada*, the

*Canada Year Book*, and the *Canadian Minerals Yearbook*, available for reference in public libraries across Canada, or for purchase through Information Canada bookshops.



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